

MS#164031.1 (MSFT 4934)  
PATENT**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

Claim 1 (currently amended): A method for signaling and waiting to suspend one or more of a plurality of first device devices, said first device devices being connected to a second device via a communications medium, said method comprising:

sending an idle request from at least one of the first device devices to the second device;  
when the at least one of the first device devices is ready to suspend be suspended; and

waiting, by the at least one of the first device devices that sent the idle request, to receive a call from the second device to a callback function associated with the first device ~~to suspend the first device~~; and

executing the callback function to selectively suspend the at least one of the first devices that sent the idle request independently of the other first devices.

Claim 2 (currently amended): The method of claim 1, wherein the second device is a computer and wherein the ~~first device is a~~ devices include one or more peripheral component components associated with the computer.

Claim 3 (currently amended): The method of claim 2, wherein the peripheral component is selected from a group consisting of a composite device, a root hub, a USB port, and a controller.

Claim 4 (currently amended): The method of claim 1, wherein sending and waiting occur via a driver controlling the first device devices.

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Claim 5 (currently amended): The method of claim 1, wherein the first ~~device~~ has devices each have an active state and an idle state and wherein the first device is devices are each ready to suspend be suspended when in the idle state.

Claim 6 (currently amended): The method of claim 1, wherein the first ~~device comprises one of~~ devices comprise a plurality of nodes organized in a tree structure, and wherein the first ~~device~~ comprises a devices comprise child ~~node~~ nodes of the second device.

Claim 7 (original): One or more computer readable media having computer-executable instructions for performing the method recited in claim 6.

Claim 8 (original): The method of claim 6, wherein the nodes in the tree are connected via a Universal Serial Bus.

Claim 9 (currently amended): The method of claim 6, wherein the at least one of the first device devices has one or more child nodes in the tree structure and wherein the at least one of the first device devices is ready to suspend be suspended when each of the one or more child nodes ~~of the~~ first device thereof is ready to suspend be suspended.

Claim 10 (currently amended): The method of claim 9, further comprising receiving, by the at least one of the first device devices, an idle request from at least one of the child nodes ~~of the~~ first device thereof.

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Claim 11 (currently amended): The method of claim 10, further comprising propagating the idle request from the at least one of the first device devices to a controller at a root of the tree structure.

Claim 12 (currently amended): The method of claim 11, wherein propagating the idle request comprises propagating the idle request by inductively traversing the tree structure from the at least one of the first device devices to the controller.

Claim 13 (currently amended): The method of claim 11, wherein propagating the idle request comprises transmitting the received idle request from the at least one of the first device devices to the second device if the at least one of the first device devices is ready to ~~suspend~~ be suspended and ~~if the first device~~ has received an idle request from each of the child nodes of the ~~first device thereof~~.

Claim 14 (currently amended): The method of claim 11, wherein propagating the idle request comprises:

determining whether the at least one of the first device devices has received an idle request from each of the child nodes ~~of the first device thereof~~;

waiting to receive an idle request from each of the child nodes if an idle request from each of the child nodes has not been received; and

submitting an idle request to the second device if the at least one of the first device devices has received an idle request from each of the child nodes.

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Claim 15 (currently amended): The method of claim 1, wherein sending an idle request comprises transmitting an input/output control (IOCTL) request from the at least one of the first device devices to the second device.

Claim 16 (currently amended): The method of claim 15, wherein transmitting the IOCTL request comprises transmitting an input/output request packet from the at least one of the first device devices to the second device.

Claim 17 (currently amended): The method of claim 1, further comprising receiving, by the at least one of the first device devices, the call from the second device to the callback function associated therewith ~~with the first device and~~ selectively suspending the at least one of the first device devices in response to execution of the received callback function.

Claim 18 (currently amended): The method of 17, further comprising waking the at least one of the first device devices.

Claim 19 (currently amended): The method of 18, wherein waking occurs in response to the at least one of the first device devices signaling the second device that the at least one of the first device devices is ready to wake be awakened.

Claim 20 (currently amended): The method of claim 18, wherein waking occurs in response to the second device signaling the at least one of the first device devices to wake.

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Claim 21 (currently amended): The method of claim 18, wherein the at least one of the first device devices comprises one of a plurality of nodes organized in a tree structure, wherein the at least one of the first device devices has one or more child nodes, and wherein waking occurs in response to at least one of the child nodes signaling the at least one of the first device devices to wake.

Claim 22 (original): The method of claim 18, wherein waking comprises resetting the sent idle requests.

Claim 23 (currently amended): The method of claim 1, further comprising sending a cancel request from the at least one of the first device devices to the second device when the at least one of the first device devices is no longer ready to ~~suspend~~ be suspended, said sending a cancel request occurring after sending the idle request.

Claim 24 (currently amended): The method of claim 1, further comprising a third device sending an idle request to the second device when the third device is ready to ~~suspend~~ be suspended and suspending simultaneously with the at least one of the first device devices, said third device having input/output control and function independent from the at least one of the first device devices.

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Claim 25 (currently amended): A method for selectively suspending a tree of devices, said tree comprising one or more devices hierarchically organized as parent devices and child devices in the tree, said tree further comprising a controller at a root of the tree, said method comprising:

receiving, by the controller, an idle request from ~~one or more of the child devices~~ one of the devices in the tree when the device is ready to be suspended; and

selectively suspending, by the controller in response to the received idle request, ~~all the device and any child devices in the tree~~ thereof only after an idle request has been received from the device and each of the child devices thereof such that the device and any child devices thereof are suspended independently of the other devices in the tree.

Claim 26 (original): The method of claim 25, wherein receiving an idle request comprises receiving, by the controller, an idle request from one or more of the child devices via software for controlling the child devices.

Claim 27 (currently amended): The method of claim 25, wherein selectively suspending comprises executing a callback function for each of the child devices to put the child devices into a low power mode.

Claim 28 (currently amended): The method of claim 25, wherein the parent devices and the child devices are connected via a Universal Serial Bus (USB), wherein ~~the tree~~ one of the parent devices comprises a USB hub and wherein one of the child devices connects to a port of the USB hub, and further comprising selectively suspending, by the controller, the USB hub.

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Claim 29 (currently amended): The method of claim 25, wherein the parent devices and the child devices are connected via a Universal Serial Bus (USB), wherein the controller is a computer, wherein the tree comprises a USB controller, and further comprising selectively suspending, by the computer, a USB host controller.

Claim 30 (original): The method of claim 25, wherein receiving an idle request comprises receiving, by the controller, an input/output control (IOCTL) request from one or more of the child devices.

Claim 31 (original): The method of claim 30, wherein receiving the IOCTL request comprises receiving, by the controller, an input/output request packet from the one or more child devices.

Claim 32 (original): The method of claim 25, wherein the parent devices and child devices are connected via a Universal Serial Bus.

Claim 33 (original): One or more computer readable media having computer-executable instructions for performing the method recited in claim 25.

Claim 34 (currently amended): One or more computer-readable media having computer-executable components for signaling and waiting to suspend a device in a tree of devices, said tree comprising one or more devices hierarchically organized as parent devices and child devices, said tree having a controller at a root of the tree, said components comprising:

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a signaling component for sending an idle request from at least one child device to a parent device when the child device is ready to suspend-be suspended, wherein the idle request propagates through the tree from the parent device to the controller; and

a driver component for waiting to receive, by the child device, a call from the controller to a callback function associated with the child device to selectively suspend the child device in response to execution of said callback function by the child device that sent the idle request independently of the other child devices.

Claim 35 (currently amended): The method of claim 34, wherein the signaling component receives an idle request from at least one child of the child ~~device-devices~~, and wherein the signaling component sends the received idle request to the parent device.

Claim 36 (original): The computer-readable media of claim 34, wherein the signaling component receives a call to a callback function from the controller in response to the propagated idle request.

Claim 37 (currently amended): The computer-readable media of claim 36, wherein the driver component selectively suspends the child device in response to execution of the callback function.

Claim 38 (original): The computer-readable media of claim 37, wherein the driver component wakes the child device in response to activity by the child device or a signal from the parent device or both.



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Claim 39 (original): The computer-readable media of claim 34, wherein the callback function comprises a power down function for powering down the child device.

Claim 40 (original): The computer-readable media of claim 39, wherein the power down function comprises a low power function for putting the child device into a low power mode.

Claim 41 (original): The computer-readable media of claim 34, wherein the parent devices and child devices are connected via a Universal Serial Bus.

Claim 42 (original): The computer-readable media of claim 34, wherein the signaling component sends a cancel request from the child device to the parent device in response to non-idle activity by the child device.

Claim 43 (currently amended): One or more computer-readable media having computer-executable components for asserting power control over a tree of devices by a controller at a root of the tree, said tree comprising one or more devices hierarchically organized as parent devices and child devices in the tree, said components comprising:

an interface component for receiving, by the controller, an idle request from one ~~or more~~ child of the devices in the tree when the device is ready to be suspended; and

a controller component for selectively suspending, by the controller in response to the received idle request, ~~all devices in the tree~~ the device and any child devices thereof only after receiving an idle request has been received from the device and each of the child devices thereof

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such that the device and any child devices thereof are suspended independently of the other devices in the tree..

Claim 44 (original): The computer-readable media of claim 43, wherein the controller wakes the devices in the tree in response to activity by the controller or any of the devices or both.

Claim 45 (original): The computer-readable media of claim 43, wherein the child device comprises a Human Interface Device (HID).

Claim 46 (original): The computer-readable media of claim 43, wherein the child device comprises a device embedded in a computer.

Claim 47 (currently amended): The ~~method~~ computer-readable media of claim 43, wherein the parent devices and child devices are connected via a Universal Serial Bus.

Claim 48 (original): A computer-readable medium having stored thereon a data structure representing an idle request, said data structure comprising:

a first field storing a routine attribute representing a callback function; and

a second field storing a context attribute representing a callback context, wherein a first device transmits an idle request to a second device via said data structure when the first device is ready to suspend, said callback function executing to suspend the first device in response to the first device transmitting the idle request, and said callback context providing an environment for executing said callback function.

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Claim 49 (currently amended): The ~~method~~ computer-readable medium of claim 48, wherein the first device has one or more child nodes organized in a tree structure, wherein the first device has an active state and an idle state, and wherein the first device is ready to suspend when each of the one or more child nodes of the first device is ready to suspend.

Claim 50 (currently amended): The ~~method~~ computer-readable medium of claim 48, wherein the first device and the second device are connected via a Universal Serial Bus.